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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,515	01/15/2004	Craig Hansen	43876-154	4558

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McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

COLEMAN, ERIC

ART UNIT	PAPER NUMBER
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2183

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/757,515	Applicant(s) HANSEN ET AL.	
	Examiner Eric Coleman	Art Unit 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 6 contain the limitations *"executing from each instruction stream received at the execution unit in a multistage pipeline within the execution unit such that, at any given time, the multistage pipeline includes instructions from different one of the instruction streams in different stages of the multistage pipeline"*. The original disclosure does not present a multistage pipeline within the execution unit much less plural instructions from different instruction streams in different stages of a multistage pipeline within the execution unit. Therefore claims 1 and 6 and the claims that depend from these claims do not comply with the written description requirement.

Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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The claims contain the following limitations: *"executing from each instruction stream received at the execution unit in a multistage pipeline within the execution unit such that, at any given time, the multistage pipeline includes instructions from different one of the instruction streams in different stages of the multistage pipeline"*. The original disclosure does not present a multistage pipeline within the execution unit much less plural instructions from different instruction streams in different stages of a multistage pipeline within the execution unit. The disclosure does not provide a description of how plural instructions from different instruction streams would be in different stages of a multiple stage pipeline within the execution unit in a manner where the execution unit could execute the instructions in a properly timed manner. It would require undue experimentation for one of ordinary skill in the DP art to provides for and perform these limitations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (patent No. 5,742,782) (submitted by applicant on IDS).

Ito taught the invention substantially as claimed including a data processing ("DP") system comprising:

Receiving an instruction stream for each of a plurality of thread at an execution unit (e.g., see fig. 1)[instruction streams for threads A,B, C received from instruction fetch part via elements 134a,134b,134c,135a,135b,135c,135d,136a,136b,136c,136d to execution parts 25a,25b,25c,25d e.g., see col. 5, line 15-col. 6, line 20];

Executing instruction from each instruction stream received at the execution unit in a multistage pipeline within the execution unit (e.g., see fig.1).

Ito did not expressly detail that (claims 1,6) the execution was such that, at any given time, the multistage pipeline includes instructions from different ones of the instruction streams in different stages of the multistage pipeline. Ito however taught that an execution unit that was arranged on an operation pipelined basis that could receive an instruction before a previous instruction had completed (e.g., see col. 6, lines 5-29). The instructions for each execution unit were from decoders that independently determined which execution unit received instruction (e.g., see col. 5, lines 5-62). Therefore it would have been obvious to one of ordinary skill in the DP art that in order for the Ito system to accept an next instruction before a previous instruction had completed in a pipeline arranged execution unit then in at least one implementation each instruction (which at times would have been from different threads) within the execution unit would have been in a separate stage of the execution unit.

Ito further taught the instructions including a single instruction that operates on a plurality of data elements in partitioned fields of at least one register (e.g., see fig. 6 and col. 4, line 39-col. 5, line 23)[the data element 173 is partitioned in fields in the corresponding register where the other field of the partitioned register comprised field

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174] to produce a concatenated result, the at least one register having a register width and each of the data elements having elemental width smaller than the register width [the result comprises data area and reservation bit concatenated together where the register width is the register width and the width of the data element is less than the register width (e.g., see fig. 6)].

As to claim 2,7 Ito taught the number of threads executing within the execution unit is prime relative to the rate of execution of a slowest functional unit in the execution unit. The number of threads is three (A, B, C), which is a prime number (e.g., see col. 5, lines 14-32).

As to claim 3,8 Ito did not expressly detail the instructions from the plurality of instruction streams are executed in a round robin manner. However since Ito taught executing instructions from plurality of threads, one of ordinary skill would have been motivated to execute the instruction in a round robin manner to ensure that each thread is executed at that same rate as the other threads especially when an instruction for one thread causes an exception and takes a long time to complete.

As to claim 4,9 Ito taught only one thread from the plurality of threads can handle an exception at a time (e.g., see col. 9, lines 1-50 and fig.12).

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (571) 272-4163. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EC


ERIC COLEMAN
PRIMARY EXAMINER